

TECHNICAL REVIEWERS' RATING SUMMARY

R004-B

North Dakota Biomass Feasibility Studies

Energy & Environmental Research Center

Principal Investigators: Kerryanne M. B. Leroux

Request for \$100,518; Total Project Costs \$201,036

Rating Category	Weighting Factor	Technical Reviewer			Average Weighted Score
		<u>1A</u>	<u>1B</u>	<u>1C</u>	
1. Objectives	9	5	3	2	30.00
2. Achievability	9	4	3	1	24.00
3. Methodology	7	4	2	1	16.33
4. Contribution	7	3	4	2	21.00
5. Awareness	5	5	1	2	13.33
6. Background	5	5	3	4	20.00
7. Project Management	2	4	3	2	6.00
8. Equipment Purchase	2	5	5	5	10.00
9. Facilities	2	5	4	4	8.67
10. Budget	2	5	4	3	8.00
Average Weighted Score		218	148	106	157.33
Maximum Weighted Score					250.00

OVERALL RECOMMENDATION

FUND	x
FUNDING MAY BE CONSIDERED	x
DO NOT FUND	x

R004-B
North Dakota Biomass Feasibility Studies
Submitted by Energy & Environmental Research Center
Principal Investigators: Kerryanne M. B. Leroux
Request for \$100,518; Total Project Costs \$201,036

- 1. The objectives or goals of the proposed project with respect to clarity and consistency with North Dakota Industrial Commission/Renewable Energy Council goals are: 1 – very unclear; 2 – unclear; 3 – clear; 4 – very clear; or 5 – exceptionally clear.**

Reviewer 1A (Rating: 5)

The objectives are clear and I believe them to be consistent with ND Industrial Commission/Renewable Energy Council. Completing the proposed objectives would be useful to developing at state strategic plan for biomass and biomass-derived fuels utilization. The focus of the project is on public facilities and North Dakota state facilities must play a key role in realizing state and national visions for biorenewable energy utilization within North Dakota. Completing this project should help position North Dakota take advantage of new investments in bioenergy and infrastructure to be made by our new Federal leadership.

Reviewer 1B (Rating: 3)

Need to clarify the communities for which the biomass resources will be evaluated. Locating all public facilities in the state is very ambitious since most communities have fire halls and community centers. In task one, potential biomass resource facilities is extremely vague.

Reviewer 1C (Rating: 2)

- Too vague with respect to the resource and the types of public facilities to be examined.
- Way too large if the objectives are taken as written.
- Biomass resources (some) have environmental considerations associated with them, but the objectives did not appear to consider that nor alternate markets if applicable.

- 2. With the approach suggested and time and budget available, the objectives are: 1 – not achievable; 2 – possibly achievable; 3 – likely achievable; 4 – most likely achievable; or 5 – certainly achievable.**

Reviewer 1A (Rating: 4)

The approach, timeline and budget are appropriate for the objectives and I believe the objectives are achievable with the proposed approach, timeline and budget.

The approach seems to be sound. Perhaps the budget and timeline are too aggressive.

Reviewer 1B (Rating: 3)

Need current data of biomass availability. Previous studies may not be valid.

Recommend distribution of the report through the North Dakota Biomass Energy Task Force, ND Department of Commerce, NDSU Extension Service and other outlets.

Reviewer 1C (Rating: 1)

- As written and taken at their word, the objectives appear to be not achievable during the time period, partly based on comments from #1.

3. The quality of the methodology displayed in the proposal is: 1 – well below average; 2 – below average; 3 – average; 4 – above average; or 5 – well above average.

Reviewer 1A (Rating: 4)

The methodologies to carry out the five key tasks proposed project are reasonable. The five task statements are adequate.

Reviewer 1B (Rating: 2)

Specifics on methodology are extremely limited.

Reviewer 1C (Rating: 1)

This is where the proposal fell apart for me. What is suggested by the objectives is way too encompassing and not near enough detail is provided on the resource assessment, economics, and environmental implications. Statements are made that past efforts have not resulted in projects (pg. 4, 5), but no supporting evidence exists to say why. This is extremely critical to the success of this project.

- Resource Assessment: What exact biomass resources will be considered? Municipal and industrial wastes bring all sorts of problems to the table and are not easily identified or costed on the economic side. Resource assessment involves quantity, quality, and economics, and I didn't see how they were going to be considered or analyzed. Also, does the resource assessment take into account one, two, or more years? Should take into account at least 5-7 years. This makes a huge difference. Ag byproducts can mean several things, including alternate markets and environmental considerations with air, soil, and/or water quality. These were not mentioned.
- Environmental: Some of the resources may have environmental implications associated with them such as agricultural by-products which were not defined. Forest resources convey the same. How will the ash be dealt with? Also, emissions from solid biomass are different versus convention fossil fuel (e.g. natural gas). These need to be taken into consideration and were not mentioned.
- Economic: To make a valid comparison between biomass fuels and the current fuel mix, real energy and economic values need to be used, not ones that are estimated. This could skew the feasibility tremendously. Also, "simple payback" has a number of meanings. This needs a strict definition up front.

- Technologies: Which combustion/gasification technologies will be considered? Cost varies by size and ability to process different types of biomass resource. This was brushed over, in my opinion.

4. The scientific and/or technical contribution of the proposed work to specifically address North Dakota Industrial Commission/Renewable Energy Council goals will likely be: 1 – extremely small; 2 – small; 3 – significant; 4 – very significant; or 5 – extremely significant.

Reviewer 1A (Rating: 3)

The scientific and/or technical contributions are relatively limed. The value is more in developing biomass utilization plans. No new science will be discovered; but, I believe the work makes a good contribution to the North Dakota Industrial Commission/Renewable Energy Council.

Reviewer 1B (Rating: 4)

The information developed by the proposed work would be very helpful in encouraging use of biomass in North Dakota.

Reviewer 1C (Rating: 2)

- Having the NDIC/REC goals mentioned would have been helpful. I can somewhat assume what they may be, based on previous experience in my own work in my state, as well as regional and national efforts.

5. The principal investigator's awareness of current research activity and published literature as evidenced by literature referenced and its interpretation and by the reference to unpublished research related to the proposal is: 1 – very limited; 2 – limited; 3 – adequate; 4 – better than average; or 5 – exceptional.

Reviewer 1A (Rating: 5)

There is almost no relevant published literature available. Authors have done as good a job as possible.

Reviewer 1B (Rating: 1)

The only reference to research is that completed at the EERC. Work outside the EERC must be included.

Reviewer 1C (Rating: 2)

- No mention appeared to be made of how other states approach or don't approach this type of project.
- The use of previous work in ND is certainly applicable, but given the tasks, more would have been desirable.
- No real attempt at getting other analyses.

6. The background of the investigator(s) as related to the proposed work is: 1 – very limited; 2 – limited; 3 – adequate; 4 – better than average; or 5 – exceptional.

Reviewer 1A (Rating: 5)

The investigators seem to be well qualified to undertake the proposed project.

Reviewer 1B (Rating: 3)

Will the marketing person be doing the marketing study? More clarification of who will be doing the various portions of the study would enable better determining the qualifications of the investigators.

Reviewer 1C (Rating: 4)

- With the personnel and other in-state resources, their background appears adequate – more economic feasibility help would be desirable.

7. The project management plan, including a well-defined milestone chart, schedule, financial plan, and plan for communications among the investigators and subcontractors, if any, is: 1 – very inadequate; 2 – inadequate; 3 – adequate; 4 – very good; or 5 – exceptionally good.

Reviewer 1A (Rating: 4)

The management plan seems to be good adequate.

Reviewer 1B (Rating: 3)

The proposal states that evaluation and monitoring of the tasks will maintain quality of work. It does not state who is monitoring or how the monitoring will be done.

Reviewer 1C (Rating: 2)

- Given the magnitude of the objectives, the timeline of one year seemed too short or more personnel would be required to both complete the project and provide reasonable results.

8. The proposed purchase of equipment is: 1 – extremely poorly justified; 2 – poorly justified; 3 – justified; 4 – well justified; or 5 – extremely well justified. (Circle 5 if no equipment is to be purchased.)

Reviewer 1A (Rating: 5)

As best I can tell no equipment is proposed to be purchased. None should be needed to accomplish the proposed work plan.

Reviewer 1B (Rating: 5)

No equipment is identified.

Reviewer 1C (Rating: 5)

9. The facilities and equipment available and to be purchased for the proposed research are: 1 – very inadequate; 2 – inadequate; 3 – adequate; 4 – notably good; or 5 – exceptionally good.

Reviewer 1A (Rating: 5)

No unusual facilities are required to undertake the proposed work. Office space is all that is required and I have assumed that is available.

Reviewer 1B (Rating: 4)

Reviewer 1C (Rating: 4)

- From what is contained in the description in the proposal and what I know about EERC, the facilities and other associated personnel are good and can provide needed assistance.

10. The proposed budget “value” relative to the outlined work and the financial commitment from other sources is of: 1 – very low value; 2 – low value; 3 – average value; 4 – high value; or 5 – very high value. (See below)

Reviewer 1A (Rating: 5)

The proposed budget value seems to be high. The proposed work could lead to a strategic plan for transforming public facilities to utilizing biomass for energy. The information and a strategic plan could enhance North Dakota’s ability attract increased federal funds for bioenergy infrastructure. Possibly the budget is too low to meet expectations and the timeline too aggressive – do the study well.

Reviewer 1B (Rating: 4)

Reviewer 1C (Rating: 3)

- One hundred thousand dollars (\$100K) seems too low for this type of project given the objectives and tasks, as there appears to be a significant amount of work and some parts (resource assessment and supply and true costing and matching of technologies for each resource), would be very cost-intensive possibly above this level to gain meaningful results.

¹ “Value” – The value of the projected work and technical outcome for the budgeted amount of the project, based on your estimate of what the work might cost in research settings with which you are familiar.

10a. Financial commitment from other sources – A minimum of 50% of the total project must come from other sources to meet the program guidelines. Higher priority is to be given if the application has private industry investment equal to or at least 50% or more of total cost.

The minimum 50% cash match is demonstrated.

Section C. Overall Comments and Recommendations:

Please comment in a general way about the merits and flaws of the proposed project and make a recommendation whether or not to fund.

Reviewer 1A (Fund)

I see an opportunity to develop a strategic plan for bioenergy utilization at public facilities. This may be helpful in responding to new opportunities that should be forthcoming from the Federal government. I do not see any significant flaws, but no new technologies will result – the proposal is more about deploying existing technologies.

Reviewer 1B (Funding May Be Considered)

The project has merit and could be very useful in helping to evaluate and promote biomass utilization in North Dakota. Unfortunately, the project plan is quite vague on methodology and specific objectives. The proposal also shows a lack of awareness of work outside of the EERC. The plan for distribution of the project results do not include methods that could achieve much better distribution. Therefore, funding can be considered, but modification to incorporate suggested improvements prior to funding is recommended.

Reviewer 1C (Do Not Fund)

In general, the proposal does not provide near the detail needed to 1) accomplish the objectives proposed or tasks listed, 2) provide the level of engineering and economic analysis really needed to make this a viable and useful state-side project, and 3) justify the expense. In my opinion, it needs significant revisions with a keen eye on providing details on resource assessment, economics, and technology assessment.

For example, the proposal is too vague with respect to the resource and the types of public facilities to be examined. Biomass resources (some) have environmental considerations associated with them, but the objectives did not appear to consider that nor alternate markets for the feedstocks, if applicable. Also, statements are made that past efforts have not resulted in projects (pg. 4, 5), but no supporting evidence exists to say why which would help provide a means for providing a different approach in this project.